



Prof. Dr. Alvaro Riascos

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Alvaro J. Riascos Villegas studied pure mathematics at the Universidad de los Andes in Bogotá, Colombia. He holds an M.Sc and a Ph.D in applied mathematics from Institute of Pure and Applied Mathematics of Rio de Janeiro (IMPA) in Brazil. He has been a visiting professor at UCLA (the University of California in Los Angeles), IMPA in Rio de Janeiro, Kellogg School of Management in Northwestern University a Visiting Fellow at the International Monetary Fund in Washington D.C., Cowles Foundation for Economic Research at Yale University; a Research Associate at JP Morgan Chase in New York, consultant for the World Bank, Inter-American Development Bank and for nine years a Senior Research Economist at the Central Bank of Colombia. His main academic interests have been the theory of general equilibrium, auction theory, game theory and machine learning applications to public policy. In 2005 he joined Faculty of Economics at the Universidad de los Andes where he is currently an associate professor. He is founder and Co-Director of Quantil (www.quantil.co), a company founded in 2008 dedicated to the application of mathematics, analytics and tailored made software for solving industry problems. He also founded the Center for Public Policy Analytics (www.centroanaliticapp.org) and he was a principal member of the Board of the independent system operator of the Colombian electricity grid (XM ESP), the Colombian Mathematical Society and a member of the asset management investment committee of Grupo Bancolombia.

Guest Seminar

Operations Research and AI for Surface Operations in Oil & Gas

This talk examines the application of operations research and artificial intelligence to surface operations in the oil and gas industry, drawing on a portfolio of nearly ninety delivered projects, the majority executed with a national oil company. The presentation follows the operational chain of a producing field. It begins with integrated development planning, in which large-scale scenario generation is combined with mathematical optimization to maximize net present value and certified reserves while minimizing energy consumption and carbon footprint. It then addresses drilling optimization through rig-state classification and Double Machine Learning models that estimate the causal effect of operational parameters on borehole quality; production surveillance through deep temporal segmentation applied to production time series across thousands of wells; and energy consumption forecasting and optimal dispatch at the level of individual fields and business units. The final section considers the service chain that sustains the field: multimodal logistics optimization under cost, transit time or emissions criteria, and procurement optimization formulated as an integer program that allocates service providers across geographic fronts under bundled discount structures.



**Monday
Sep 14, 2026**



3:00 PM



Hybrid Session

B5-R103 (Physical attendance)

(Online via Zoom) - <https://kfupm.zoom.us/j/99328606915>